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Smart Panel System using Internet of Things

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Abstract

Technological developments that require humans to constantly innovate, utilize electricity in the community, assist the public about the dangers that exist. Electrical energy becomes very dangerous if the user process is not equipped with a good protection system. Conventional overload protection devices, such as MCB, can cut off electricity only from load points and cannot cut selective loads. Today's internet technology can be used not only for communication between individuals but also for communication between objects. By using the internet, devices can send data to each other and send requests to other devices. The Internet-based Smart Panel Is designed to protect components, and monitor the remote use of electrical energy and control equipments via a smartphone. This tool uses NODEMCU and ESP12 for wireless communication. The PZEM004T sensor module is used as a current load reader.

Keywords: Internet of things, Experimentation, Prototypes and demonstrators.

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1. Introduction

The development of technology requires people to constantly innovate, utilize electricity, and provide assistance to the community in relation to the danger of short-circuit exposure. Electrical energy can be dangerous if it is used without a good protection system. Conventional overload protection devices, such as MCBs, can cut off electricity only from load points. They cannot cut selective loads. Protection system that cuts off electricity selectively releases the load, increasing the flow of electricity so that all loads do not totally die. The internet is a technology that allows several devices to communicate each other without using cables. By using the internet, each device can send data and also send requests to other devices. One of the uses of the internet that has become a trend is IoT (Internet of Things) [1-2]. IoT is a system where physical objects can be connected to the internet through sensors [1]. IoT (Internet of Things) technology combines all electrical components and provides devices that are able to communicate each other and provide demand for other devices. In addition to being able to connect between Internet of Things (IoT) technology devices, it can also connect a device to a Smartphone or computer so that it can be monitored and controlled remotely [2].

2. Related Research Studies

Previous research has focused on Low-cost IoT energy systems which have been designed and applied that can be used in many applications, such as electricity billing systems, energy management in smart grids and home automation [3]. Research on A system for energy monitoring system (Watt On) has been proposed for use per room in the house that is efficient, intuitive, and economical (cost-effective) [4]. Lipi Chhaya, dkk Has researched solutions for three smart grid hierarchical networks such as home area networks, areas of the network environment, and wide area networks using prototype development and testing [5].

3. Tools Schema

The design of an IoT-based Smart Panel requires components supported by NodeMCU 12-E which is a